

WHAT IS CLAIMED IS:

1. A driving assistance apparatus for displaying and guiding a peripheral condition of a vehicle in an easily understanding manner, comprising:

a camera mounted on a peripheral portion of the vehicle;  
an virtual observing point converting unit which converts an image picked up by the camera into an image viewed from a virtual observing point;

10 a image synthesizing unit which synthesizes the images viewed from a virtual observing point to display a peripheral condition of the vehicle;

an obstacle sensing unit which senses presence of an obstacle and which measures at least one of a distance from the own vehicle up to an obstacle and a direction of the obstacle;  
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a safety area predicting unit which predicts a safety area of the peripheral portion of the own vehicle, in which the obstacle is not present, based upon the information acquired  
20 by the obstacle sensing unit.

2. The driving assistance apparatus as claimed in claim 1, further comprising:

25 a safety area superposing unit which superposes the safety area on the image synthesized by the image synthesizing unit

for display the superposed area.

3. A driving assistance apparatus for displaying and guiding a peripheral condition of a vehicle in an easily 5 understanding manner, comprising:

a camera mounted on a peripheral portion of the vehicle;

an virtual observing point converting unit which converts an image picked up by the camera into an image viewed from a virtual observing point;

10 a image synthesizing unit which synthesizes the images viewed from a virtual observing point to display a peripheral condition of the vehicle;

an obstacle sensing unit for measuring a distance from the own vehicle up to an obstacle and a direction of the obstacle, 15 and also for sensing presence of the obstacle by way of a sensor;

an obstacle sensing unit which senses presence of an obstacle and which measures at least one of a distance from the own vehicle up to an obstacle and a direction of the obstacle;

20 and

an obstacle area superposing unit which superposes the obstacle area on the image synthesized by the image synthesizing unit for display the superposed area.

25 4. The driving assistance apparatus as claimed in claim

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wherein the obstacle sensing unit corresponds includes a distance measuring sensor capable of measuring a distance from the own sensor up to the obstacle, and outputs the shortest 5 distance from the own vehicle among the detected obstacles as the distance up to the obstacle,

wherein the safety area predicting unit predicts a safety area corresponding to an area is detectable by the distance measuring sensor and the area is located within one of a sphere 10 and a circle where the distance up to the obstacle is defined as a radius, while a mounting position of the distance measuring sensor is used as a center of the sphere or the circle.

5. The driving assistance apparatus as claimed in claim

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wherein the obstacle sensing unit includes an ultrasonic-wave sensor capable of measuring a distance from the own sensor up to the obstacle, and outputs the shortest 20 distance from the own vehicle among the detected obstacles as the distance up to the obstacle; and

wherein the obstacle area predicting unit predicts an area where an obstacle is present, that corresponds to an area detectable by the ultrasonic-wave sensor, and the area located outside one of a sphere and a circle where the distance 25 up to the obstacle is defined as a radius, while a mounting

position of the ultrasonic-wave sensor is used as a center of the sphere or circle.

6. The driving assistance apparatus as claimed in claim

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wherein the obstacle sensing unit includes one of an ultrasonic-wave sensor having a plurality of ultrasonic-wave oscillating sources and an ultrasonic-wave sensor capable of varying a direction of the scanning operation,

10 wherein the obstacle area predicting unit grasps a substantially shape of the obstacle which is faced to a side of the own vehicle based upon the information derived from the obstacle sensing unit, and predicts the area where the obstacle is present, which involving a dimension of the obstacle.

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7. The driving assistance apparatus as claimed in claim  
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wherein the safety area superposing unit superposes the safety area predicted by the safety area predicting unit on  
20 the image synthesized by the image synthesizing unit in at least one of a flickering display manner, a half-tone dot meshing display manner, and a transparent color display manner.

8. The driving assistance apparatus as claimed in claim

25 3,

wherein the obstacle area superposing unit superposes the obstacle area predicted by the obstacle area predicting unit on the image synthesized by the image synthesizing unit in at least one of a flickering display manner, a half-tone 5 dot meshing display manner, and a transparent color display manner.